

SWBAT: discover how flashlights work

Jan 4-7:20 AM

# Welcome!!!

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SECA Physics  
Tuesday 4 March 2014

\* Pick up:

- slip of paper (for later)
- index card

Centering

Opening Questions:

What does Ohm's Law tell us?

VOLTAGE = CURRENT X RESISTANCE

Sep 7-7:04 AM



### Mystery Resistor - extra credit

- You may work alone or with at most one other person of your choosing.
- Get a "Mystery Resistor" labeled with a letter from Leslie
- Use the same equipment that our teams used in class. Take measurements that will allow you to calculate the resistance (in Ohms) of your resistor.
- You may work when there is spare time in class or arrange other time with Leslie.

Due by 3:00 Friday 3/28

Jan 19-7:12 AM

### Puzzle of the Day!

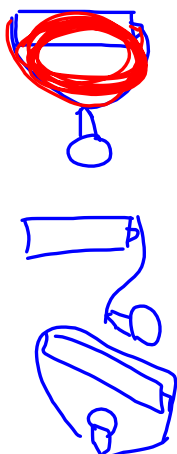
How many ways can you get the bulb lit?

- \* Find a partner
- \* Send one person to get equipment
  - one AA battery
  - one bulb
  - two wires
  - a piece of paper for results
- \* Put your names on the paper and **sketch**
  - successful &
  - unsuccessful attempts

**SAFETY:**

IF BATTERY  
GETS HOT,  
STOP IT!

**FAIL**



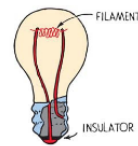
**WIN**



Mar 9-7:31 AM

So what did we find out about circuits?

- CONNECTED: COMPLETE PATH!
- BOTH SIDES OF BATTERY!
- SIDE & BOTTOM OF BULB.



Mar 10-6:42 AM

Think, Pair, Share:

To get current to flow through the bulb, do we want the path to be

OPEN

Why do you say that?

or

CLOSED

???

Think about cars and roads. Think about train tracks too.

→ CONNECTED  
NO GAPS



Mar 10-6:45 AM

More practice using Ohm's Law:

$$\text{VOLTAGE} = \text{CURRENT} \times \text{RESISTANCE}$$

$$V = I \cdot R$$

a)  $R = 10\ \Omega$ ,  $I = 3\text{A}$ ,  $V = ?$

$$V = I \cdot R = 3\text{A} \cdot 10\ \Omega = 30\text{V}$$

b)  $V = 12\text{V}$ ,  $I = 4\text{A}$ ,  $R = ?$

$$R = \frac{V}{I} = \frac{12\text{V}}{4\text{A}} = 3\ \Omega$$

$$\frac{V}{I \cdot R}$$


c)  $V = 3\text{V}$ ,  $R = 6\ \Omega$ ,  $I = ?$

$$I = \frac{V}{R} = \frac{3\text{V}}{6\ \Omega} = \frac{1}{2}\text{A}$$

d) YOUR TURN! MAKE UP A QUESTION ON INDEX CARD...

Mar 10-6:49 AM

Concept sheet: 6 rows total

Concept	Meaning	Symbol	Units	Bike Analogy
CHARGE	PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	$q$	COULOMBS $C$	
VOLTAGE = ELECTRIC POTENTIAL	POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD "PUSH"	$V$	VOLTS $V$ $1\text{V} = \frac{1\text{J}}{1\text{C}}$	PERSON PEDALING $\Rightarrow$ THE PUSH
CURRENT	THE FLOW OF ELECTRIC CHARGE $= \frac{\text{CHARGE}}{\text{TIME}}$	$I$ $I = \frac{q}{t}$	AMPERE $A$ $1\text{A} = \frac{1\text{C}}{1\text{s}}$	- WHEEL CHAINS MOVING
RESISTANCE	OPPOSITION OF CURRENT "AGAINST THE FLOW"	$R$	OHMS $\Omega$	BRAKES
OHM'S LAW	VOLTAGE = CURRENT TIMES RESISTANCE	$V = I \cdot R$	$1\text{V} = 1\text{A} \cdot 1\ \Omega$	HOW HARD DO YOU PEDAL? BRAKE AFFECTS SPEED

$$\frac{q}{I \cdot t}$$

$$\frac{V}{I \cdot R}$$

Feb 23-7:34 AM

## Daily 3 Questions

- \* Every day except test/project days
- \* 3 Questions on the topics of the day
- \* Main source of daily points
- \* I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

CP Homework - Explain why a light bulb won't light if one wire goes to each side.

Your can't get your points if you don't have your NAME!!!

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. True or False: For a continuous flow of electrons, there must be a complete circuit with no gaps.

2. Beside the bulb, wires, and battery, what is something else you would need to make a flashlight?

- SWITCH  
- HOLDER  
- MIRROR

3. Will the bulb light in this picture?

NO



Feb 18-6:59 AM